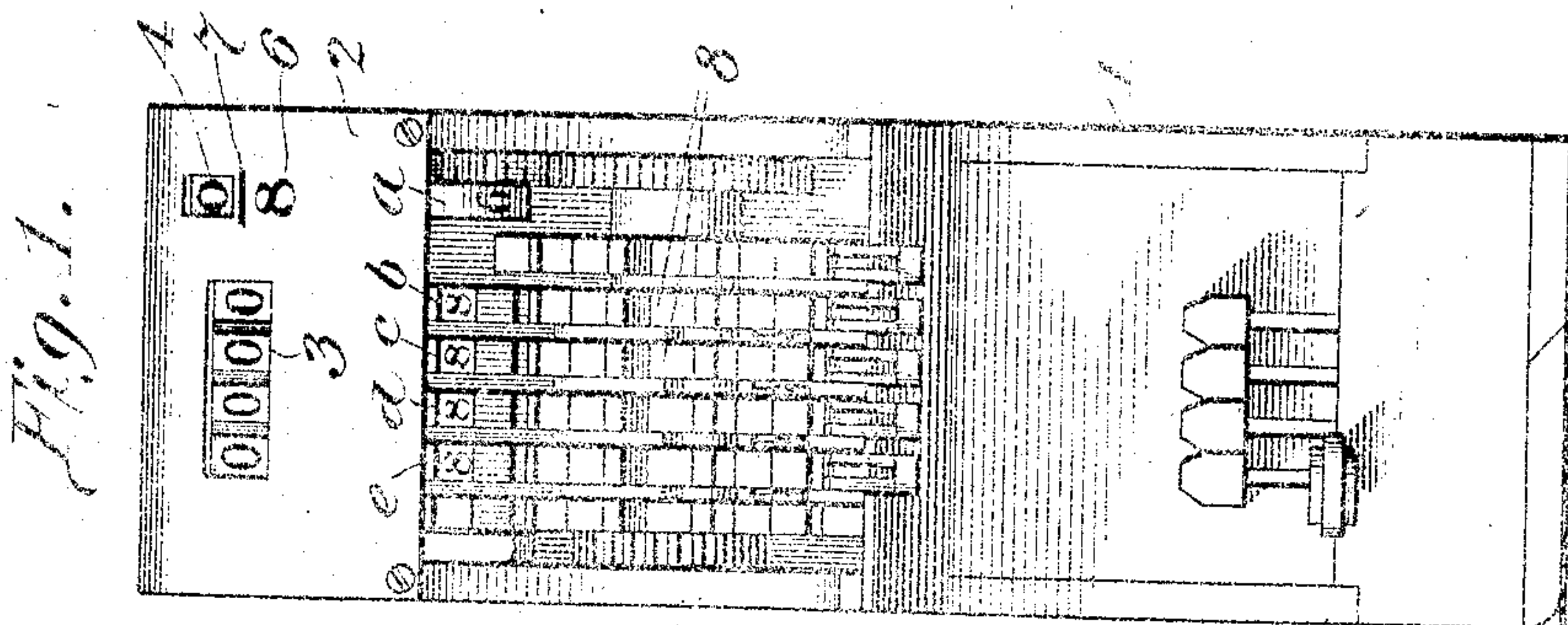
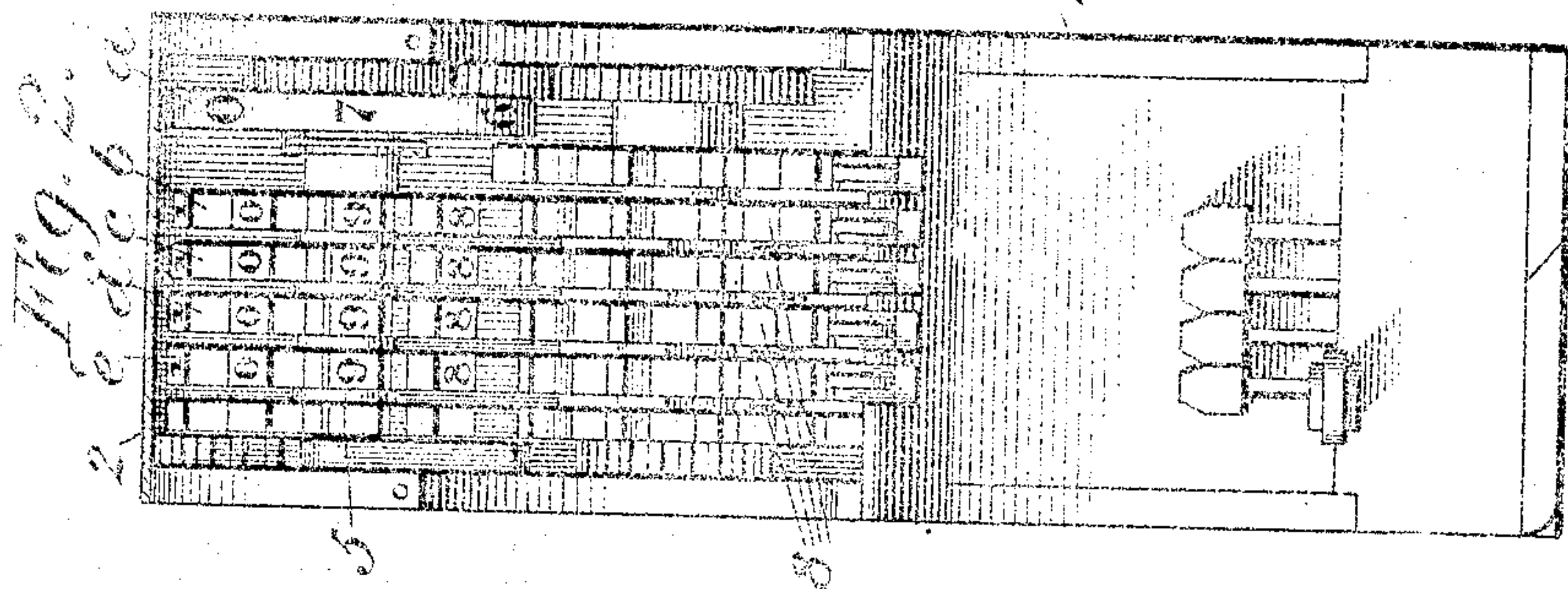
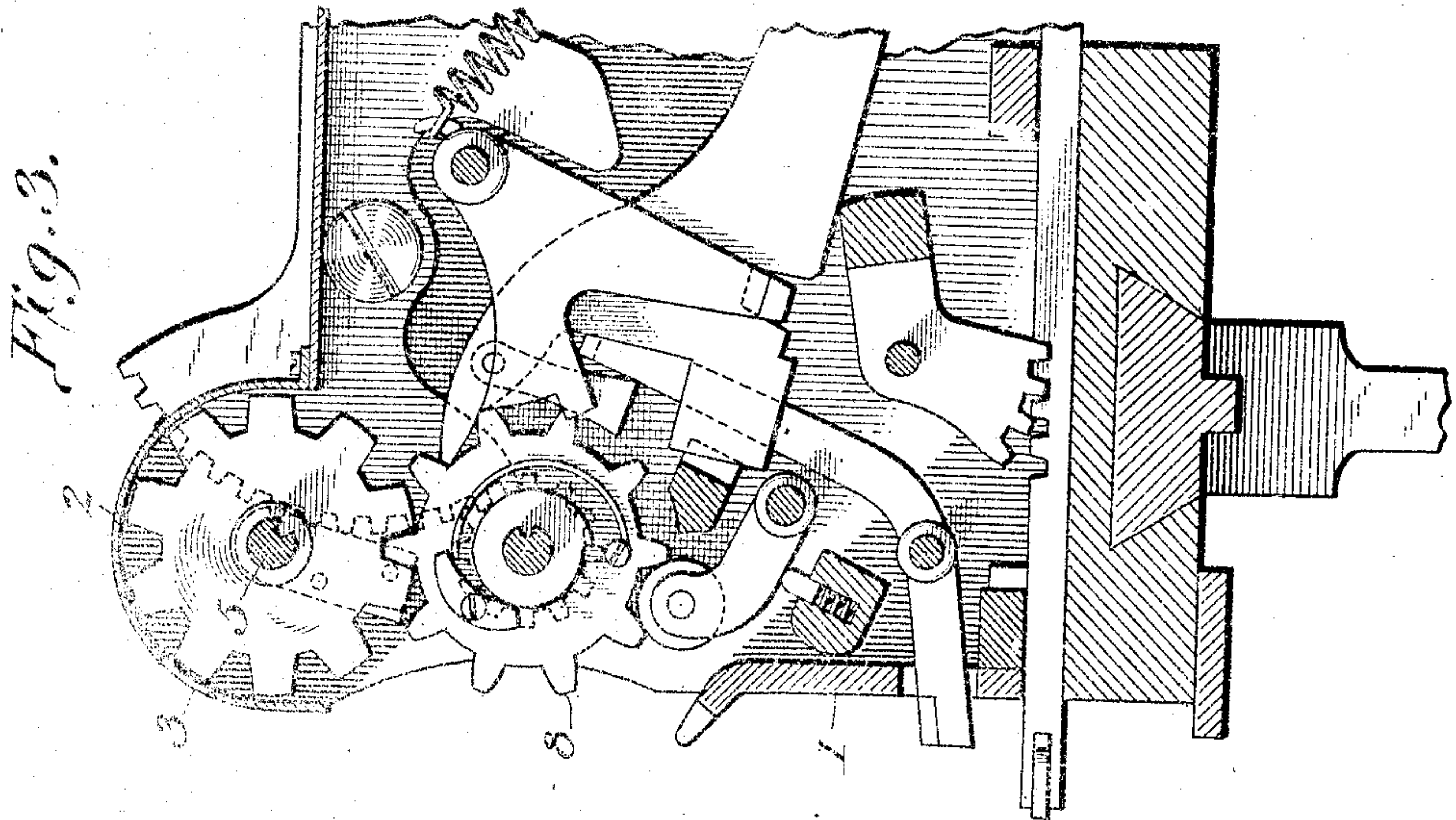


No. 885,326.

PATENTED APR. 21, 1908.

W. L. DENCH.
REGISTER FOR ADDING MACHINES.

APPLICATION FILED NOV. 27, 1907.



Witnesses:

J. Frank Leavelle
Doretta A. Colne

Inventor,

By *William L. Dench.*
L. G. Gulik
Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM LESTER DENCH, OF PELHAM, NEW YORK, ASSIGNOR TO ELLIOTT-FISHER COMPANY,
OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

REGISTER FOR ADDING-MACHINES.

No. 885,326.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed November 27, 1907. Serial No. 404,056.

To all whom it may concern:

Be it known that I, WILLIAM L. DENCH, a citizen of the United States, residing at Pelham, in the county of Westchester and State of New York, have invented a new and useful Register for Adding-Machines, of which the following is a specification.

This invention relates to fractional registers in general, but more particularly to registers of that type employed in combined typewriting and adding machines, as for instance, what is known to commerce as the Elliott-Fisher billing machine, exemplified in Patents Nos. 820,879 and 829,971 to Charles F. Laganke and John A. Smith.

The object of the invention is to provide a novel arrangement of parts whereby the reading of the registered value is facilitated.

In registers of the character specified, digits on the peripheries of a series of number wheels are displayed opposite a sight opening in the register casing. Heretofore these numbers have been arranged in alinement and their significance has not been readily apparent, although the abstract value of the number has been obvious. It has been proposed to construct a register wherein one or more of the registering wheels will represent fractional values, but so far as I am aware, the displayed digit, or digits, representing the numerator of the fractional value have always appeared in line with the digits representing the whole number. Such an arrangement is liable to cause confusion in the reading of the registered value.

In accordance with my present invention, it is contemplated to register the whole number and the fraction in a manner which will make a display substantially like that made by a number and fraction when written or printed, to the end that the significance of the fractional registration will be clearly apparent at a glance. To this end the casing of the register is provided with separate sight openings in different horizontal planes, and the digits on the peripheries of the several number wheels are so arranged that the digits representing the whole number will appear in alinement opposite the lower sight opening, while the digit representing the numerator of the fractional value will be displayed in an elevated position opposite the upper sight opening and above a permanent denominator displayed on the register casing.

In the accompanying drawings—Figure 1 is a front view of a fractional register constructed and arranged in accordance with my invention. Fig. 2 is a similar view with the upper front wall or hood of the casing in section to show more distinctly the relative arrangement of the digits on the several wheels, and Fig. 3 is a vertical longitudinal sectional view through a portion of the register.

The register casing 1 is equipped as usual, at the upper front corner thereof, with a curved wall or hood 2. The hood is provided with a comparatively long, horizontal sight opening 3, spaced from the right hand end of which by an interval preferably equivalent to a number space, is a second and comparatively small sight opening 4, which occupies a somewhat elevated position relative to the opening 3. Within the casing 1 is mounted a computing and registering mechanism which is, generally speaking, of ordinary character, except for the relative arrangement of the digits on the peripheries of the number wheels.

The number or registering wheels *a*, *b*, *c*, *d* and *e* are of corresponding diameter and are mounted within the hood 2 on a transverse number wheel shaft 5. The wheels *b* to *e* inclusive, are what are known as ten-increment wheels and display upon the outer faces of their teeth the digits 0 to 9 inclusive. These wheels register, opposite the sight opening 3, the whole number, of which they represent the different denominations, as for instance, units, tens, hundreds and thousands.

The wheel *a* is separated from the wheel *b* by a letter space interval, and although of the same diameter as the other number wheels, is what is known as an eight-increment wheel, and registers the numerator of the fractional value. On the periphery of this numerator wheel *a* are displayed eight characters, to-wit, the digits 0 to 7 inclusive, since in the present instance, this wheel is designed for the addition of eighths. The digits on the wheel *a* are presented successively opposite the relatively elevated fractional sight opening 4, the digits on this wheel being so arranged, that when the wheel comes to rest, a digit thereon will not be located in alinement with the reading line of the other wheels, but will, on the contrary, be located in that relatively elevated posi-

tion with respect to the whole number which is usually occupied by the numerator of a fractional designation, when a whole number and a fraction are written or printed.

5 The denominator 6 of the fractional designation, in the present instance the digit "8", is permanently displayed on the front wall of the casing, directly below the sight opening 4, so that the variable numerator displayed at said opening will read naturally in
10 conjunction with the subjacent permanent denominator.

It is usual in expressing a fractional value to provide a horizonatal line between the
15 numerator and the denominator. Such a line, indicated in the drawings by 7, is therefore permanently displayed on the wall of the casing, substantially midway between the numerator and the denominator and in a
20 plane about midway of the upper and lower edges of the whole number opening 3. In other words, the line 7 is located opposite the center of the whole number, and the numerator and denominator are equidistantly
25 spaced, as usual, above and below the line, so that the whole number and fractional designations will appear in their usual and ordinary relation, and thus facilitate the accurate reading of the registered value. In
30 other words, the numerator may occupy an elevated position relative to the whole number, while the denominator will occupy a relatively depressed position. It is immaterial, however, whether or not the numerator and
35 denominator extend above and below the whole number, since the digits expressing the fraction may be considerably smaller than those expressing the whole number and the entire fractional designation may therefore
40 occupy no greater space vertically than is occupied by the whole number, the gist of the invention residing in clearly differentiating the numerator digit of the fractional designation from the digits expressing the whole
45 number. The numerator digit is therefore relatively elevated within the purview of this invention if a horizontal line drawn through its center lies in a plane higher than a line drawn through the center of the whole
50 number.

The number wheels may be operated in any suitable manner, as for instance through the medium of an alined series of idlers 8, adapted to be successively engaged by a
55 master wheel mounted on and movable with the typewriter carriage, and operated by the numeral keys of the typewriter, in a manner well understood in the art and more particularly pointed out in the two patents heretofore identified.
60

The means whereby motion is transmitted from the idlers or operating wheels 8 to the number wheels, the mechanism whereby values are carried from one wheel to another,
65 and the means whereby the resetting of the

number wheels is effected, are not material to the present invention and have only been generally shown in the accompanying drawings.

Before concluding, it may be stated that 70 while the illustrated embodiment of the invention comprehends the employment of four registering wheels devoted to the registration of the whole number, and a single registering wheel devoted to the registration 75 of eighths, the number of wheels of either character is immaterial. It is likewise immaterial what fractional value is indicated, it being understood, however, that any variation of the denominator will be accompanied 80 by a corresponding variation of the series of digits on the enumerator wheel *a*.

It is thought that from the foregoing, the construction and operation of my register will be fully comprehended, and I wish to be 85 distinctly understood as reserving the right to effect such changes, modifications, or variations of the illustrated structure as may come fairly within the scope of the protection prayed.
90

What I claim is:—

1. In a register of the character described, the combination with means for registering a variable whole number, of means for registering a variable fractional value with the 95 numerator displayed in an elevated position relative to the whole number.

2. A register having a series of number wheels exhibiting an alined series of digits representing a whole number, an additional 100 wheel exhibiting a numerator in a relatively elevated position, and a denominator exhibited below the numerator.

3. In a register of the character described, the combination with a casing having sight 105 openings in different horizontal and vertical planes, of a series of denominational members exhibiting an alined series of digits at one opening, a member exhibiting a digit at the other opening, and a denominator exhibited 110 on the casing below the opening last named.

4. In a register, the combination with a casing having a whole number sight opening and a relatively elevated numerator sight 115 opening beyond one end of the opening first named, of a shaft, a series of wheels mounted on said shaft and bearing digits arranged to be exhibited at the respective sight openings, and a denominator exhibited on the casing 120 below the numerator sight opening and occupying a depressed position relative to the whole number sight opening.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature 125 in the presence of two witnesses.

WILLIAM LESTER DENCH.

Witnesses:

ETHEL FLINN,
W. J. EVERT.